REMARKS

I. Status Summary

Claims 8-11, 13-17, 34-37, and 42 are now pending in the subject U.S. patent application as a result of a Restriction/Election Requirement.

Applicants' election with traverse of Group XXI has been deemed proper and made final. However, the Patent Office has indicated that SEQ ID NOs: 1-8, 28, and 29 will be searched together.

The Title of the invention has been objected to upon the contention that it is not descriptive of the claimed invention.

Claims 8 and 42 are objected to as dependent on non-elected claims.

Claims 8-17, 34-37, and 42 have been rejected under 35 U.S.C. § 101 upon the contention that the claims are drawn to an invention with no apparent or disclosed patentable utility. These claims have also been rejected under 35 U.S.C. § 112, first paragraph, upon the contention that because there is no specific or substantial asserted utility or a well established utility, one of ordinary skill in the art would not know how to use the claimed invention.

Claims 8-11, 13-17, 34-37, and 42 have been rejected under 35 U.S.C. § 112, first paragraph, upon the contention that the specification does not reasonably provide enablement for a nucleic acid encoding a polypeptide that is substantially identical to SEQ ID NO: 2, or a nucleic acid encoding a polypeptide cross-reactive with a polypeptide of SEQ ID NO: 2.

Claims 8-17, 34-37, and 42 have been rejected under 35 U.S.C. § 112, first paragraph, upon the contention that the claims encompass subject matter that is not described in the specification in such a way as to reasonably convey to one of ordinary skill in the art that the inventors had possession of the claimed invention at the time the application was filed.

Claim 11 has been rejected under 35 U.S.C. § 112, second paragraph, upon the contention that the term "substantially" renders the claim indefinite.

Claims 8-17 and 42 have been rejected under 35 U.S.C. § 102(b) upon the contention that the claims are anticipated by PCT International Patent Application Publication WO 95/04822 (hereinafter "WO 95/04822").

Claims 8-10, 13-17, 34-37, and 42 have been rejected under 35 U.S.C. § 103(a) upon the contention that the claims are unpatentable over WO 95/04822 in view of the Stratagene catalog (1988, page 39).

Claims 8-10 and 42 have been canceled. Claims 11, 13, 16, and 34 have been amended. Support for the amendments can be found throughout the specification of the application as filed, including particularly in the claims as originally filed. Additional support for the amendments can be found in the Sequence Listing, on page 21, lines 15-27, and on page 22, lines 21-28. No new matter has been added by virtue of the claim amendments.

New claims 63-66 have been added. Support for the new claims can be found throughout the specification as filed, including particularly in the claims as filed. Additional support can be found on page 21, lines 15-27 (recited nucleic acid molecules lack SEQ ID NO: 23 and SEQ ID NO: 25). Accordingly, no new matter has been added by the addition of new claims 63-66.

Reconsideration of the application as amended and based on the remarks set forth below is respectfully requested.

II. Response to the Objection to the Specification

The Title of the Invention has been objected to as non-descriptive. Applicants have amended the Title to reflect the subject matter of the pending claims. Thus, applicants respectfully request that the objection to the Title be withdrawn.

III. Response to the Objection to the Claims

Claims 8 and 42 are objected to as dependent on non-elected claims. Claims 8 and 42 have been canceled, and thus the instant objection appears to have been rendered moot.

IV. Response to the Rejection under 35 U.S.C. § 101

Claims 8-17, 34-37, and 42 have been rejected under 35 U.S.C. § 101 upon the contention that the claims are drawn to an invention with no apparent or disclosed patentable utility. According to the United States Patent and Trademark Office (hereinafter "the Patent Office"),

> The instant application has provided a description of an isolated DNA encoding a protein and the protein encoded thereby. The instant application does not disclose the biological role of this protein or its significance. The claimed invention is not supported by either a specific and substantial utility or a well established utility. Novel biological molecules lack well-established utility and must undergo extensive experimentation.

Official Action at page 3. The Patent Office also asserts:

> It is clear from the instant specification that the nucleic acid encoding the VDCC-α1 polypeptide has been assigned a function because of its similarity to known proteins... However, it is commonly known in the art that sequence-to-function methods of assigning protein function are prone to errors.

Official Action at page 3.

> Consequently, the Patent Office asserts:
>
> The instant claims are drawn to a nucleic acid encoding a polypeptide which has an as yet undetermined function or biological significance. Until some actual and specific significance can be attributed to the protein identified in the specification as VDCC-α1, the instant invention is incomplete... In the absence of knowledge of the natural substrate or biological significance of this protein, there is no immediately obvious patentable use for it... Since the instant specification does not disclose a "real world" use for VDCC-α1 then the claimed invention is incomplete and, therefore, does not meet the requirements of 35 U.S.C. § 101 as being useful.

Official Action at pages 5-6.

After careful review of the rejection and the Patent Office's bases therefor, applicants respectfully traverse the rejection and submit the following remarks.

Initially, applicants respectfully note that the instant rejection appears to be based on the assertion that homology-based functional assignments are prone to errors. Accordingly, the Patent Office appears to have adopted a per se rule that such homology-based functional assignments cannot be used to establish utility. However, the Patent Office's attention is directed to Public Comment (19) and the Patent Office's response thereto, published in Volume 66 of the Federal Register on page 1096. This Comment is directly on point, and was rejected by the Patent Office. The Patent Office's response indicated that a fact dependent inquiry is required because "the commenters provide no scientific evidence that homology-based assertions of utility are inherently unbelievable or involve implausible scientific principles". 66 Federal Register at page 1096, *citing In re Brana*, 51 F.3d 1560, 1566 (Fed. Cir. 1995).

According to the Utility Examination Guidelines printed in the Federal Register,

> a patent examiner must accept a utility asserted by an applicant unless the Office has evidence or sound scientific reasoning to rebut the assertion. The examiner's decision must be supported by a preponderance of the evidence... More specifically, when a patent application claiming a nucleic acid asserts a specific, substantial, and credible utility, and bases the assertion upon homology to existing nucleic acids or proteins having an accepted utility, the asserted utility must be accepted by the examiner unless the Office has sufficient evidence or sound scientific reasoning to rebut such an assertion. "[A] 'rigorous correlation' need not be shown in order to establish practical utility; 'reasonable correlation' is sufficient... The Office will take into account both the nature and the degree of the homology.

Utility Examination Guidelines at page 1096 (citations omitted and emphasis added). Applicants respectfully submit that the Patent Office has not provided evidence or sound scientific reasoning to rebut the assertion in the present specification that the VDCC-α1 polypeptides disclosed function as voltage dependent calcium channel polypeptides in platelets, nor is the Patent Office's decision supported by a preponderance of the evidence.

Applicants respectfully submit that the instant claims are directed, *inter alia*, to isolated and purified nucleic acid molecules encoding biologically active platelet voltage dependent calcium channel (VDCC) α1 subunit polypeptides. Representative polypeptides have the amino acid sequences of SEQ ID NOs: 2 and 4, and are encoded by SEQ ID NOs: 1 and 3. The claimed biomolecules are identified as VDCC α1 gene products based on homology to known VDCC α1 gene products. Particularly and as noted by the Patent Office, SEQ ID NO: 4, which corresponds to a human platelet VDCC family member (ha1D), is 98% identical to a human neuronal calcium channel subunit α1D disclosed in WO 95/04822, with 2144 out of 2161 amino acids being identical. Additionally, SEQ ID NO: 2, which corresponds to a human platelet VDCC family member (ha1S), is 98% identical to GENBANK® Accession No. NP_000060 (calcium channel, voltage-dependent, L type, alpha 1S subunit; calcium channel, L type, alpha 1 polypeptide, isoform 3 (skeletal muscle, hypokalemic periodic paralysis) [Homo sapiens]). Applicants respectfully submit that when the Patent Office takes into account the nature and the degree of the homology between the claimed polypeptides and known VDCC polypeptides as required in the Interim Examination Guidelines, it is clear that the assignment of function as VDCC α1 to the claimed sequences is based on a "reasonable correlation" between the homologies of the various proteins.

Applicants also respectfully direct the Patent Office's attention to Example 10 of the Revised Interim Utility Guidelines Training Materials (hereinafter the "Training Materials"). In this Example, SEQ ID NO: 2 was 95% similar to a DNA ligase. The Training Materials clearly points out that this degree of similarity leaves "no reason to doubt the assertion that SEQ ID NO: 2 encodes a DNA ligase". As such, applicants respectfully submit that the Patent Office has "no reason to doubt the assertion that" SEQ ID NOs: 2 and 4, which are 98% identical to other human calcium channel α1D or α1S subunits, respectively, encode calcium channel subunits.

Continuing with the instant rejection, applicants respectfully submit that the instantly claimed nucleic acids also show a platelet-specific alternative splicing pattern. As disclosed in the specification at page 13, lines 5-9, "The characteristic feature of

platelet VDCC α1 subunits as compared with known VDCC α1 subunits is indicated as a missing sequence in the IV $S_3 - S_4$ linker. Figure 2 demonstrates that platelet VDCC α1S and α1D subunit polypeptides are expressed in platelets and megakaryocytes". Applicants respectfully submit that this characteristic feature has been highlighted in the claims by amending claim 11 to add the element "wherein the nucleotide sequence comprises SEQ ID NO: [29 or 28]" in subsections (a) and (b), respectively. SEQ ID NOs: 29 and 28 correspond to the junction sequences present in SEQ ID NOs 1 and 3, respectively, that result from the alternative splicing event and are thus not present in other known VDCC α1 subunits.

Continuing with the instant rejection, applicants respectfully submit that the Patent Office's assertion that "the instant claims are drawn to a nucleic acid encoding a polypeptide which has an as yet undetermined function or biological significance" is clearly erroneous. The Patent Office also states that "until some actual and specific significance can be attributed to the protein identified in the specification as VDCC-α1, the instant invention is incomplete". Applicants respectfully submit that SEQ ID NOs: 1-4 clearly correspond to platelet VDCC α1 gene products. Furthermore, VDCC α1 gene products have a well established function and biological significance. Thus, applicants respectfully submit that the invention is not "incomplete" as asserted by the Patent Office.

As such, applicants respectfully submit that the Patent Office has not presented a *prima facie* case of lack of utility supported by a preponderance of the evidence. In fact, the Patent Office offers no specific support whatsoever that would lead one of skill in the art to believe that the claimed platelet VDCC α1 gene products would not function as voltage dependent calcium channels in platelets.

Applicants next turn to the Patent Office's assertions that the utility disclosed in the application as filed, that the claimed nucleic acids and polypeptides can be used in diagnostic assays to detect VDCC α1 polypeptides or mRNA expression in biological samples, is substantial but not specific. According to the Patent Office, hybridization probes can be designed from any polynucleotide sequence, and the specification does

not disclose specific cDNA or DNA targets. Applicants respectfully submit that on the contrary, SEQ ID NOs: 1 and 3 explicitly disclose complete open reading frames (*i.e.* cDNAs) that encode platelet VDCC α1 polypeptides. Thus, applicants respectfully submit that a substantial and specific utility has been presented for the instantly disclosed nucleic acids and polypeptides: the claimed nucleic acids and polypeptides can be used in diagnostic assays to detect VDCC α1 polypeptides and/or mRNA expression in biological samples, wherein the biomolecules to be assayed are encoded by SEQ ID NOs: 1 or 3 to produce a polypeptide of SEQ ID NOs: 2 or 4. As such, the Patent Office's assertion that "the specification does not disclose specific cDNA or DNA targets" is clearly erroneous.

Furthermore, the discovery of the splice variants in platelets described in more detail hereinabove allows for specific analysis of the various VDCC α1 polypeptides expressed in platelets and megakaryocytes. For example, SEQ ID NOs: 28 and 29 can be found as contiguous units only in nucleic acids encoding the presently disclosed platelet VDCC α1 polypeptides. Nucleic acids encoding other VDCC α1 polypeptides are not characterized by these "junction sequences", because the junction sequences result only from the platelet-specific alternative splice disclosed in the present specification.

Additionally, applicants respectfully submit that investigations into platelet function and activity represent practical, real world utility given the medical importance of platelets. For example, platelets are recovered and stored for introduction into human subjects in need thereof. Stored platelets have a limited shelf life, however, and efforts to extend this shelf life receive considerable attention in the medical community. The identification of platelet-specific VDCC α1 nucleic acids can lead to the identification of candidate compounds or molecules that are capable of modulating the transcription level of a gene encoding a platelet VDCC α1 subunit polypeptide and thus are capable of acting as therapeutic agents in the modulation of platelet VDCC α1 subunit polypeptide effects. As disclosed in the specification, "this modulation can affect calcium homeostasis in platelets, platelet activation and other biological functions

of platelets and can also effect platelet storage or production of platelet products". *See* Specification beginning at page 70, line 33. Thus, applicants respectfully submit that the claimed nucleic acids have substantial and specific utility.

Applicants further respectfully submit that this utility is credible. Applicants respectfully submit that one of ordinary skill in the art would understand instantly how to use the disclosed biomolecules for the disclosed purposes. Stated another way, applicants respectfully submit that "the assertion of utility is believable to a person of ordinary skill in the art based on the totality of evidence and reasoning provided". *See* REVISED INTERIM UTILITY GUIDELINES TRAINING MATERIALS at page 5 (definition of "credible utility").

Summarily, applicants respectfully submit that the specification as filed discloses biologically active VDCC $\alpha 1$ coding sequences and polypeptides encoded thereby that are expressed in platelets. Thus, applicants respectfully submit that the rejection of claims 8-17, 34-37 and 42 under 35 U.S.C. § 101 is improper, and respectfully request that it be withdrawn at this time.

V. Response to the Rejections under 35 U.S.C. § 112, First Paragraph

V.A. Response to the Rejection under this Section Related to the Rejection under 35 U.S.C. § 101

Claims 8-17, 34-37, and 42 have been rejected under 35 U.S.C. § 112, first paragraph, upon the contention that because the claimed invention is not supported by either a specific and substantial utility or a well established utility, one skilled in the art would have know how to use the claimed invention. After careful review of the rejection and the Patent Office's basis therefor, applicants respectfully traverse the rejection and submit the following remarks.

Applicants direct the Patent Office's attention to the remarks presented hereinabove with regard to the rejection under 35 U.S.C. § 101. Applicants respectfully submit that since the utility rejection has been addressed, the instant rejection has been rendered moot. Claims 8-10 and 42 have been canceled, and claim 12 was withdrawn

as a result of the Restriction Requirement. Thus, the rejection as to these claims has been rendered moot. Accordingly, applicants respectfully request that the instant rejection of claims 11, 13-17, and 34-37 under 35 U.S.C. § 112, first paragraph, be withdrawn.

V.B. Response to the Enablement Rejection

Claims 8-11, 13-17, 34-37, and 42 have been rejected under the enablement requirement of 35 U.S.C. § 112, first paragraph, upon the contention that the specification does not reasonably provide enablement for a nucleic acid encoding a polypeptide which is substantially identical to SEQ ID NO: 2, or a nucleic acid encoding a polypeptide cross-reactive with a polypeptide of SEQ ID NO: 2.

After careful review of the rejection and the Patent Office's basis therefor, applicants respectfully traverse the rejection and submit the following remarks.

Initially, applicants respectfully submit that the Patent Office concedes that the specification as filed enables the nucleic acid of SEQ ID NO: 1, and a nucleic acid encoding a full-length polypeptide of SEQ ID NO: 2. Applicants further respectfully submit that that similarly, the specification enables the nucleic acid of SEQ ID NO: 3 and the polypeptide of SEQ ID NO: 4. In each case, the nucleic acid contains the complete open reading frame, beginning with an initiator ATG codon and terminating with a stop codon. Thus, SEQ ID NOs: 1 and 3 encode the full length polypeptides of SEQ ID NOs: 2 and 4. Applicants respectfully submit that as a result, the specification enables not only SEQ ID NOs: 1 and 3, but SEQ ID NOs: 2 and 4 as well.

Continuing with the instant rejection, applicants respectfully submit that they have amended the claims to recite isolated and purified nucleic acid molecules encoding biologically active platelet voltage dependent calcium channel (VDCC) α1 subunit polypeptides, wherein the isolated and purified nucleic acid molecules comprise a nucleotide sequence selected from the group consisting of:

(a) a nucleotide sequence at least 90% identical to SEQ ID NO: 1, wherein the nucleotide sequence comprises SEQ ID NO: 29;

(b) a nucleotide sequence at least 90% identical to SEQ ID NO: 3, wherein the nucleotide sequence comprises SEQ ID NO: 28; and

(c) a nucleotide sequence that encodes a polypeptide having an amino acid sequence as set forth in one of SEQ ID NOs: 2 and 4.

The Patent Office cites an extensive list of references that are asserted to teach that various amino acid changes can result in alterations in protein function. Even assuming *arguendo* that such references support the Patent Office's general assertion, applicants respectfully submit that the claims have been amended to recite nucleic acid molecules encoding biologically active VDCC α1 polypeptides.

Applicants respectfully submit that those of skill in the art can determine whether a nucleic acid encoding a purported VDCC α1 falls within the scope of the claim by simple, routine experimentation. Initially, the sequence of the nucleic acid molecule can be determined as disclosed in the specification and in accordance with art-recognized techniques, and the biological activity of the encoded protein can be determined using routine assays that are disclosed in the specification and within the skill of the ordinary artisan. As a result, since undue experimentation would not be required, applicants respectfully submit that the specification supports the full scope of the claims.

Accordingly, applicants respectfully submit that the rejection of claims 8-11, 13-17, 34-37, and 42 under the enablement requirement of 35 U.S.C. § 112, first paragraph, has been addressed. Claims 8-10 and 42 have been canceled, and thus the rejection as to these claims has also been rendered moot. Thus, applicants respectfully request that the rejection of claims 11, 13-17, and 34-37 under the enablement requirement of 35 U.S.C. § 112, first paragraph, be withdrawn, and the claims allowed at this time.

V.C. Response to the Written Description Rejection

Claims 8-11, 13-17, 34-37, and 42 have been rejected under the written description requirement of 35 U.S.C. § 112, first paragraph, upon the contention that the claims contain subject matter that was not described in the specification in such a way as to reasonably convey to one of ordinary skill in the art that the inventors had

possession of the claimed invention as of the filing date. According to the Patent Office, the specification does not describe polynucleotides and polypeptides that are "substantially identical" to SEQ ID NO: 2 or encode (or are) polypeptides that are immunologically cross-reactive with a polypeptide of SEQ ID NO: 2.

After careful review of the rejection and the Patent Office's bases therefor, applicants respectfully traverse the rejection and submit the following remarks.

Initially, applicants respectfully submit that the claims have been amended as outlined hereinabove. Applicants further respectfully submit that the phrase "substantially identical" no longer appears in the claims. Rather, claim 11 has been amended to recite a particular level of identity, namely, at least 90% identity to SEQ ID NO: 1 or 3, with the proviso that the sequences comprise SEQ ID NO: 28 or 29. As disclosed in the instant specification, the presence of the "junction sequence" of either SEQ ID NO: 28 or 29 identifies the VDCC $\alpha 1$ as being a platelet VDCC $\alpha 1$ (*i.e.* includes the platelet-specific alternative splice).

Support for these amendments can be found throughout the specification as filed, including particularly at page 22, lines 21-28.

Accordingly, applicants respectfully submit that the rejection of claims 8-11, 13-17, 34-37, and 42 under the written description requirement of 35 U.S.C. § 112, first paragraph, has been addressed. Claims 8-10 and 42 have been canceled, and thus the rejection as to these claims has been rendered moot. Thus, applicants respectfully request that the rejection of claims 11, 13-17, and 34-37 be withdrawn, and the claims allowed at this time.

VI. Response to the Rejection under 35 U.S.C. § 112, Second Paragraph

Claim 11 has been rejected under 35 U.S.C. § 112, second paragraph, upon the contention that the term "substantially" renders the claim indefinite. According to the Patent Office, the term "substantially" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the metes and bounds of the invention.

After careful review of the rejection and the Patent Office's bases therefor, applicants respectfully traverse the rejection and submit the following remarks.

Initially, applicants respectfully submit that the claim as filed recited the nucleic acid molecule of claim 8, comprising... (b) a nucleic acid molecule that is substantially identical to any of SEQ ID NOs:1 , 3, 5-8, 28, or 29. Contrary to the Patent Office's assertion, the specification does indeed define "substantially identical" as follows:

> As used herein, DNA analog sequences are "substantially identical" to specific DNA sequences disclosed herein if: (a) the DNA analog sequence is derived from coding regions of the nucleic acid sequence shown in any of SEQ ID NOs:1, 3, 5-8, 28, and 29 and lacks sequences of SEQ ID NOs:23 and 25; or (b) the DNA analog sequence is capable of hybridization to any of SEQ ID NOs:1, 3, 5-8, 28, and 29 under stringent conditions, lacks sequences of SEQ ID NOs:23 and 25, and encodes a biologically active gene product of the nucleic acid sequence shown in any of SEQ ID NOs:1, 3, 5-8, 28, and 29; or (c) the DNA sequences are degenerate as a result of alternative genetic code to the DNA analog sequences defined in (a) and/or (b). Substantially identical analog proteins will be greater than about 60% identical to the corresponding sequence of the native protein. Sequences having lesser degrees of identity but comparable biological activity are considered to be equivalents.

Specification at page 21, lines 15-27. As such, applicants respectfully submit that the term "substantially identical" is defined in the specification is such a way as to inform the skilled artisan of the metes and bounds of the claim.

However, in an effort to facilitate prosecution of the claims, claim 11 has been amended to recite isolated and purified nucleic acid molecules encoding biologically active platelet voltage dependent calcium channel (VDCC) α1 subunit polypeptides, wherein the isolated and purified nucleic acid molecules comprise a nucleotide sequence selected from the group consisting of: (a) a nucleotide sequence at least 90% identical to SEQ ID NO: 1, wherein the nucleotide sequence comprises SEQ ID NO: 29; (b) a nucleotide sequence at least 90% identical to SEQ ID NO: 3, wherein the nucleotide sequence comprises SEQ ID NO: 28; and (c) a nucleotide sequence that

encodes a polypeptide having an amino acid sequence as set forth in one of SEQ ID NOs: 2 and 4.

Applicants respectfully submit that as a result of the amendment of claim 11, the instant rejection has been addressed. Applicants respectfully request that the rejection be withdrawn, and the claim allowed at this time.

VII. Response to the Rejection under 35 U.S.C. § 102

Claims 8-17 and 42 have been rejected under 35 U.S.C. § 102(b) upon the contention that the claims are anticipated by WO 95/04822. According to the Patent Office, WO 95/04822 teaches the cloning and expression of nucleic acids encoding voltage dependent calcium channels that are 62.7% identical to SEQ ID NO: 2, and encode polypeptides with stretches of amino acids that are long enough to cross react with antibodies to SEQ ID NO: 2. The Patent Office further asserts that WO 95/04822 teaches a nucleic acid that is 98.3% identical to SEQ ID NO: 4, and a polypeptide that would cross react with antibodies to SEQ ID NO: 4.

After careful review of the rejection and the Patent Office's bases therefor, applicants respectfully traverse the rejection and submit the following remarks.

Initially, applicants respectfully submit that claim 11 has been amended as described hereinabove. As a result of the amendments to claim 11, applicants respectfully submit that the cited reference does not support a lack of novelty rejection of the instantly claimed subject matter because WO 95/04822 does not disclose the nucleic acids or amino acids of SEQ ID NOs: 1-4. Specifically, WO 95/04822 does not disclose nucleic acids at least 90% identical to either of SEQ ID NOs: 1 and 3 and that comprise either SEQ ID NO: 28 or 29 as claimed in claim 11. As disclosed in the instant specification, the presence of the "junction sequence" of either SEQ ID NO: 28 or 29 identifies the VDCC $\alpha 1$ as being a platelet VDCC $\alpha 1$ (*i.e.* includes the platelet-specific alternative splice).

Accordingly, applicants respectfully submit that the rejection of claims 8-17 and 42 under 35 U.S.C. § 102(b) over WO 95/04822 has been addressed. Claims 8-10 and

42 have been canceled, claim 12 has been withdrawn as a result of the Restriction Requirement, and thus the instant rejection has been rendered moot as to these claims. Therefore, applicants respectfully submit that claims 11 and 13-17 are in condition for allowance, and respectfully solicit a Notice of Allowance to that effect.

VIII. Response to the Rejection under 35 U.S.C. § 103(a)

Claims 8-10, 13-17, 34-37, and 42 have been rejected under 35 U.S.C. § 103(a) upon the contention that the claims are unpatentable over WO 95/04822 in view of page 39 of the 1988 Stratagene catalogue. According to the Patent Office, WO 95/04822 teaches the cloning and expression of nucleic acids encoding voltage dependent calcium channels that are 62.7% identical to SEQ ID NO: 2, and encode polypeptides with stretches of amino acids that are long enough to cross react with antibodies to SEQ ID NO: 2. The Patent Office further asserts that WO 95/04822 teaches a nucleic acid that is 98.3% identical to SEQ ID NO: 4, and a polypeptide that would cross react with antibodies to SEQ ID NO: 4. The Patent Office further asserts that the 1988 Stratagene catalogue teaches a motivation to combine reagents of use into a kit. Thus Patent Office thus contends that it would have been obvious to one of ordinary skill in the art to combine the labeled nucleic acid molecule as taught by WO 95/04822 into a kit as taught by the 1988 Stratagene catalogue since the 1988 Stratagene catalogue teaches a motivation for combining reagents of use in any assay into a kit.

After careful review of the rejection and the Patent Office's bases therefor, applicants respectfully traverse the rejection and submit the following remarks.

Applicants respectfully direct the Patent Office's attention to the remarks presented hereinabove with regard to the deficiencies of WO 95/04822. Briefly, applicants respectfully submit that WO 95/04822 does not teach the nucleic acids and amino acids of SEQ ID NO: 1-4. Specifically, WO 95/04822 does not disclose nucleic acids at least 90% identical to either of SEQ ID NOs: 1 and 3 and that comprise either SEQ ID NO: 28 or 29 as claimed in claim 11.

Additionally, applicants respectfully submit that WO 95/04822 does not suggest the nucleic acids and amino acids of SEQ ID NO: 1-4. Given that in order to support a *prima facie* obviousness rejection the cited combination must teach or suggest each and every element of the claims, applicants respectfully submit that the combination of WP 95/04822 and the 1988 Stratagene catalogue does not support a *prima facie* obviousness rejection of claim 11 or claim 34. Claims 13-17 and 35-37 all depend directly or indirectly from claim 11 or claim 34. Thus, the combination of WO 95/04822 and the 1988 Stratagene catalogue does not support a *prima facie* obviousness rejection of claims 8-10, 13-17, 34-37, and 42 under § 103.

Accordingly, applicants respectfully request that the rejection of claims 8-10, 13-17, 34-37, and 42 under 35 U.S.C. § 103(a) be withdrawn. Claims 8-10 and 42 have been canceled, and thus the instant rejection has been rendered moot as to these claims. As a result, applicants respectfully submit that claims 13-17 and 34-37 are in condition for allowance, and respectfully request a Notice of Allowance to that effect.

IX. Discussion of the New Claims

New claims 63-64 have been added. Support for the new claims can be found throughout the specification as filed, including particularly in the claims as filed. Additional support can be found on page 21, lines 15-27 (recited nucleic acid molecules lack SEQ ID NO: 23 and SEQ ID NO: 25). Accordingly, no new matter has been added by the addition of new claims 63-64.

Applicants respectfully submit that the new claims are patentably distinguishable over the cited references for reasons similar to those given hereinabove regarding the pending rejections. Accordingly, applicants respectfully submit that claims 63-66 are also in condition for allowance, and respectfully solicit a Notice of Allowance to that effect.

CONCLUSIONS

Should there be any minor issues outstanding in this matter, the Examiner is respectfully requested to telephone the undersigned attorney. Early passage of the subject application to issue is earnestly solicited.

DEPOSIT ACCOUNT

The Commissioner is hereby authorized to charge any fees associated with the filing of this correspondence to Deposit Account Number **50-0426**.

Respectfully submitted,
JENKINS, WILSON & TAYLOR, P.A.

Date: 02/09/2005 By: _____

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